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ABSTRACT

Description of a course designed for preservice education students, with the objective of developing positive attitudes toward handicapped students and basic knowledge and beginning skills needed to instruct a wide variety of handicapped children in regular classroom settings, is presented. The course was divided into the following modules: (1) humanism, examining the relationship between perception and behavior; (2) teacher effectiveness training, providing techniques by which future teachers might best communicate with their students and examine their own attitudes; (3) contingency management, providing a basic methodology for management of instruction and behavior problems in the classroom; (4) mainstreaming rationale, promoting a better understanding of the problems of the handicapped; (5) individualization of instruction, developing knowledge and skill in a variety of methods of individualization; and (6) measurement and evaluation, designed to provide basic knowledge and skills in the use of teacher-made tests and assessment procedures as well as standardized tests in making judgments about student achievement and effectiveness of instruction. Appended are samples of forms used by students to evaluate the course. Summary statistics are presented in tabular form. (JD)

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GROWTH OF ATTITUDES, KNOWLEDGE, AND SKILL REQUIRED BY P.L. 94-142 AMONG PRESERVICE TEACHERS

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The author wishes to acknowledge the contribution of many colleagues who worked together as an interdepartmental team in the development of the course described in this paper. The assistance of the students enrolled in his section of the course and other student representatives in other sections is also acknowledged. The evaluation methods, results, and the opinions expressed based upon the data are not necessarily those of the College administration or faculty.

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It is the purpose of this paper to describe a course designed to teach: (a) positive attitudes toward handicapped persons, and (b) basic knowledge and beginning skills needed to instruct a wide variety of handicapped children in regular classroom settings. The effectiveness of the course in achieving these goals is described using a number of measures including attitude scales, achievement tests, performance tasks, and skill demonstrations. The procedures and methods used to evaluate the growth of students are presented and may be of value to others with similar concerns. Recommendations are provided concerning how to continue the growth of functional skills of mainstreaming among post-graduate, inservice teachers. The implications of increased teacher tolerance for diversity among students and increased competence in adapting instruction to a wide range of individual differences, both of which may result from teacher preparation for mainstreaming practices, are noted as possible benefits to all students.

CONTEXT

On November 29, 1975, P.L. 94-142, the "Education of All Handicapped Children Act" was signed into law by former president Gerald Ford. The purpose of the Act was to insure that all handicapped children receive a free and appropriate education designed to meet their individual needs but conducted in the least restrictive educational environment, typically the regular classroom. Thus, handicapped children were to be "mainstreamed" into the regular classroom and instructed by regular teachers (LaVor, 1977).

Shortly after this legislation teacher education institutions began to develop courses and programs designed to instruct preservice and inservice teachers in the knowledge and skills required to engage in mainstreaming. Kentucky was one of these. Three proposals concerned with developing

teacher competencies for teaching handicapped students in regular classrooms were submitted to the Bureau for Educationally Handicapped over a three year period (Denemark & Arnold, 1975; Denemark & Barnard, 1976; Denemark & Morsink, 1977). All three were funded and Kentucky began a revision of its undergraduate teacher education program to incorporate attitudes, knowledge, and skills required to develop competence in mainstreaming practices by teachers.

At Kentucky an interdepartmental steering group conceptualized the main thrust of the approach. Early conceptualization suggested three areas which defined the functional skills required for effective mainstreaming practice. These were: (a) the ability to recognize and deal with individual differences in pupil needs in instructional settings, (b) the ability to design and manage classroom instruction across many methods and modes of instruction, and (c) the ability to assess student performance and learning by a variety of means toward making reasonable inferences about student needs, accomplishments, and the effectiveness of instructional plans and programs (Cole & Musser, 1977, p. 278). These three areas were used to articulate and define the search for and development of instructional materials and modules which were to be incorporated into a new course called The Psychology of Teaching and eventually into existing courses in the professional teacher education sequence.

Approximately 25 faculty members from eight different departments within the College of Education were involved in identifying and developing a wide range of instructional materials and modules by which to achieve the intended course objectives and content. From the beginning it was agreed that the structure of the course should reflect the best of instructional materials and methods which could be identified from existing published resources and which if incorporated, could be further developed, modified, or adapted by faculty as needed. There was also an intention to use a wide

range of instructional media, materials, and methods toward developing a system of instructional modules which would be highly motivating, informative, and capable of building positive attitudes toward mainstreaming practices and the functional knowledge and skills required to begin doing so.

The products of this faculty activity were organized into a logical course of study taught in a series of modules by 12 faculty members to 17 students at the junior level. Each faculty member was responsible for one module and a coordinator was always present in class and responsible for the overall operation and sequence of the course. The students involved in this initial trial of the course, the faculty, and the coordinator met during and after the course to evaluate the objectives, methods, and outcomes of the modules. Many improvements were made in the structure of the course before it was taught again.

In the next round of activity, an interdepartmental team of several faculty members each taught individual sections of the course with each faculty member being responsible for instruction of all modules in the course. However, each instructor had the assistance of well designed instructions for use of the module and the ready assistance of other members of the team expert in the module content. At this stage, much of the course consisted of simulation activities, film and video tape experiences often tied to individual and small group observation, inference construction, and problem solving activities. Skill building demonstrations and practice, in areas such as designing individualized instruction for certain students, learning how to assist students with orthopedic handicaps to move from a wheelchair to a desk or toilet, and designing assessment procedures by which to infer student learning, were also a large part of the course. The reminder of the course content consisted of a program of readings in a number of books and period-

icals, individualized projects and activities selected by students to meet their needs and interests, and seminars and discussion sessions.

All sections were taught in the same manner and shared methods and materials. The instructional team and groups of student representatives from each section also met frequently throughout the semester to share problems, ideas for course improvement and related matters. Therefore, although the remainder of this paper is a detailed study of the effectiveness of the course based upon the in-depth analysis of the experiences of 18 students and one instructor in one section, it is reasonable to infer similar results in other sections as well. Other evidence supportive of this inference is presented later in the paper.

INSTRUCTIONAL OBJECTIVES, METHODS, AND CONTENT

Each of the specific modules included in the course were selected to be supportive of the three content areas described earlier as essential to carrying out the mandate of mainstreaming. In addition it was felt that unless future teachers could be disabused of the usual fears and misconceptions about handicapping conditions and handicapped persons, there would be no point in teaching functional skills of mainstreaming. Unless attitudes of acceptance, tolerance, and informed understanding exist concerning handicaps of a wide variety, teachers will not willingly become involved in working with handicapped students on a personal basis in their classrooms. Therefore, a primary objective was to develop positive attitudes toward and informed knowledge about handicapped and exceptional persons. It was also hypothesized that this could best be accomplished in an open, honest and supportive classroom climate where students and the professor would be free to examine their fears, lack of knowledge, and existing prejudices without feeling threatened or incompetent. This decision influenced both the

content and method of instruction throughout the course.

The first three modules in the course were titled "Humanism", "Teacher Effectiveness Training" and "Contingency Management". They were included as a first component to teach something of the varieties of ways by which to provide effective classroom management, one of the main areas designated as necessary to effective mainstreaming in the earlier conceptualization (Cole & Musser, 1977, p. 278). However, there was also another reason for including the first two modules, "Humanism" and "Teacher Effectiveness Training." The humanism module examined the relationship between perception and behavior in the tradition of Arthur Combs and other perceptual psychologists who are concerned with how the perception of a helping professional, such as a teacher, about a client, such as a student, restricts or enhances what the student is allowed to do and can do (Combs, 1971). The readings and activities in this module were designed to sensitize the preservice teachers to the power their perceptions of handicapped persons have on their own behavior towards these students and the behavior and welfare of the students themselves. Thus, what students feared, believed, and thought about handicapped persons was presented as an important area of study to be explored and examined throughout the course toward becoming more rational and more knowledgeable. Such inquiry into one's feelings and beliefs was presented as the basis upon which all functional skills of mainstreaming should be built.

The "Teacher Effectiveness Training" module also served a dual purpose. In addition to providing a technique by which these future teachers might communicate more openly, honestly, and accurately with their future students, it also provided a means whereby they could better communicate their concerns, fears, feelings, and ideas to the instructor and each other in the present course. Topics and modules dealing with seizure disorders, experiences in

learning to assist orthopedically handicapped children in toilet activities, and other areas are typically fearful and problematic for most of us. The skills and sensitivities acquired in the first two modules were continously used and practiced throughout the course by the students and instructors toward developing and maintaining an open, honest, and supportive atmosphere in which to inquire, grow, and learn.

The next module was "Contingency Management". It served the purpose of providing yet another basic methodology for the management of instruction and behavior problems in classroom settings through the use of behavioral techniques. It also taught something of the procedures by which to specify and organize behavioral objectives, and to devise behavioral observations and assessments of student capabilities and learning. Thus it contributed to the assessment of learning and design of instruction thrusts of the course as well as to the classroom management thrust.

The next module was titled "Mainstreaming Rationale". It was designed to present something of the history of how handicapped persons have been poorly treated and excluded in our culture and others. The consequences of needless restriction and institutionalization of persons with handicaps were explored from the standpoint of the effects on the personal development of the individual as well as the effect upon the community and social group in terms of cost of care and reduced productivity in wages and other contributions. The mainstreaming movement and P.L. 94-142 were explored and their origins in a broader range of social awareness and concern with human rights and human potential noted. For example, it was noted that removal of persons from institutional restricted environments is a trend which has been occurring in prison reform, the care of the elderly and orphans, and in mental and physical health care practices. The purpose of this activity was to provide

a broader understanding of the movement and its origins toward promoting more wisdom in comprehending the specifics of mainstraming in educational settings.

The next module "Individualization of Instruction" was aimed at developing knowledge and skill in a variety of methods of individualization. The module taught by example. Students prepared an individual learning contract. They selected an individual project from an array of some 15 possibilities each of which could be adapted to their own content area and age level interests. During class time students worked in a number of learning centers individually or in small groups. The centers and activity stations were set up in the regular classroom and in other places such as an instructional materials center. Students learned how to adapt and use the typical range of instructional materials available in secondary and elementary classrooms in a large number of ways to individualize the rate and content of student learning according to special needs and interests. During this period of about three weeks, there were no lectures or large class group discussions. Seldom did the whole class meet as a group. Small group and individual conferences, study sessions, programmed instruction, and contract planning and evaluation sessions were used in the instruction of the module. A key contributor to the success of the module was the Teacher Training Program, Instructional Management Kit (Smith & Bently, 1975). This kit teaches a wide variety of individualization of instruction methods by systematic attention to specifying objectives of instruction, concepts to be learned, activities by which to learn, the time frame required, the processes (reading, writing, observation, comparison, construction, etc.) used, and the instructional mode. Furthermore, all of its instruction is through individualized learning centers, activity packets,

and other means which model specific methods by which to individualize instruction.

The sixth module "Measurement and Evaluation" was designed to provide basic knowledge and skills in the use of teacher made tests and assessment procedures as well as standardized tests in making judgments about student achievement and the effectiveness of instruction. Some of the evaluation, testing, and other assessment procedures used in the course were used as examples of appropriate methods. Students also prepared a test or some other assessment procedure to use in their teaching for judging the degree of student learning in some topic of their choosing.

The remaining modules all dealt with specific exceptionalities and handicaps frequently encountered in school settings and with which teachers must be able to cope under the mainstreaming legislation. These included highly gifted and creative students, students with learning and behavior disorders, orthopedic handicaps, seizure disorders, and sensory impairments. In each of these modules common fears, prejudices, and misconceptions were examined and studied. Information on the frequency, causes, and consequences of each condition were presented in a factual way with readings, films, charts, and pamphlets. Materials, such as those available for these purposes from the Epilepsy Foundation, were gathered by the module developers and made available to students. Training films and simulation activities also provided specific instruction on the types of instructional accomodations and methods by which to accomodate the needs of blind, hearing impaired, and other handicapping conditions of students in regular classroom settings.

Each of the modules, and the sequence in which they were taught, may be found in Figure 1 at the end of this report.

EVALUATION OF STUDENT GROWTH IN ATTITUDES, KNOWLEDGE, AND SKILL

A variety of evaluation measures and methods were used throughout the course and in a follow-up study of 12 students engaged in actual or student teaching four months after the course was completed. In addition, one attitude scale and knowledge assessment instrument was administered to an additional 132 students enrolled in seven sections of the same course in a subsequent semester. It is the purpose of this section of the paper to describe the methods of evaluation and the purpose and characteristics of the instruments used.

Assessment of Knowledge and Skill Achievement: Methods & Procedures

Over the span of the 11 modules, 17 measures of student knowledge of course content and basic mainstreaming skills were obtained. These assessments included: (a) written assignments of a problem solving nature, (b) typical multiple choice and essay tests at the end of sections of the course, (c) individual student projects requiring the interpretative or applicatative use of module knowledge and skills to solve a problem such as constructing and I.E.P. for a student with a specific handicapping condition and given levels of educational functioning, and (d) skill demonstrations of particular techniques and methods. All of these measures and the category to which each belongs are presented in Figure 2 at the end of this report.

All achievement measures were scored as soon as possible after their administration to students. Although the number of items and the total possible raw score differed from one measure to another, all measures were scaled on a common arbitrary scale of 10 points to assist in comparing achievement across modules and measures. The means and standard deviations were reported for the total scores for each measure on the 10 point common

metric. These may be found in Figure 2 with the means for each measure presented as the dot with a circle around it and the standard deviation presented as the vertical line bounded by two short horizontal lines.

No reliability estimates were computed for the 17 achievement measures. There are several reasons for this. First, many of the measures were criterion referenced tests being tied to the achievement of knowledge and skills explicitly stated in individual module objectives. Second, the variance of many of these measures was too low, because of mastery learning and criterion referenced performance concerns, to make feasible the computation of internal consistency reliability estimates by the usual methods. Third, collectively the measures represent a range of assessment procedures, which while all objectively scored, did not all lend themselves to the usual procedures of item analysis and reliability estimates. And, fourth, although all student performances on all four types of measures were objectively scored and performance converted to numerical values on a standard metric of 10 points, copies of student's individual item responses to particular items within each measure were not kept. There were two reasons for not preserving these individual item responses of students. The first was that all such measures were returned to students after scoring as part of the student's materials. These were often specific projects, plans, and procedures or solutions to problems which student's had invested large amounts of time and effort in completing and for which they had future use. The second reason was that the duplication of all of this material by which to allow later studies of internal consistency across students, on given measures, while possible, was not practical in terms of time and cost.

Finally, the overall judgment of student achievement was based on the weighted and summed profile of performance scores across all 17 measures. No reasonable inferences could be made about the reliability of the measures overall in the classical sense in terms of those few performance tests for which internal consistency coefficients could have been easily determined. Consequently, although care was taken to insure the face validity of the achievement measures compared to the objectives, content, and learning experiences provided in each module, nothing is known about the reliability of the measures overall.

The bulk of assessment tasks for determining student achievement were written assignments. The grading of these written assignments was made fairly objective by the use of four specific criteria for evaluating the completeness and the quality of the assignment. The four criteria included: (a) whether or not the task had been fully completed, (b) whether the issues, problems, events, or situations raised by the student had been clearly labeled and accurately described, (c) whether or not the student made an attempt to apply module and course concepts and skills to the interpretation, explanation, judgment, conclusions, recommendations, etc. presented as a solution to the problem assigned or selected; and (d) whether or not the judgments, interpretations, explanations, and conclusions presented were logical and technically correct with respect to course concepts and skills. This last criterion concerned the degree to which the student applied course concepts and skills wisely and well rather than literally, inaccurately, or inconsistently. Each student's written assignment, and most of the project assignments as well, were graded using these four criteria. Each written product of each student was rated four times on a 1 to 10 scale and the total four scale score summed and divided by four to

obtain a final numerical grade. Students were fully informed of this procedure and the criteria prior to the first assignment and were given instruction in how to prepare written assignments designed to meet such criteria. Appendix A is a replication of the criteria and instruction for their use as these were presented to students.

Written assignments and project activities were also designed with the four criteria in mind. For example, an assignment found in the "Mainstreaming Rationale" module is as follows:

> Jimmy is a junior high school student. He is confined to a wheelchair and is unable to stand or get out of the chair without assistance. He attends a school which has three floors, no elevators, and no special rest room facilities for handicapped persons. Because of this, school officials have Jimmy spend his whole day in the nurse's office. He studies the same subjects all the other students study. Once every day or so, usually on their lunch hour or free period, his teachers come by to give him his assignments and briefly speak with him. He sometimes talks with other students who come into the nurse's office. Answer the following questions using your knowledge and understanding gained from this module and the earlier modules in the course.
>
> A. Is this school in compliance with the intent of P.L. 94-142?
> B. Is Jimmy in the least restrictive environment in this school?
> C. Describe at least one other plan which could be used in this school with its present limitations which would mainstream Jimmy.
> D. If you were Jimmy and you were in the situation described above how would you feel? Why? What effects might these feelings have on you and others around you?

This type of individual written or project assignment is typical of many of those used throughout the course. Its proper completion allows for much divergent thinking in formulating good answers. The content of the student's response, when examined on the four criteria, tells much about the degree to which students have internalized the course concepts, skills, and attitudes. In fact, contrary to the popular belief that it is possible to fake a good answer to such questions, the results in Figure 2 show that

the variance in student performance on such written assignments is often greater than for more traditional tests of a multiple choice nature. If used properly, such written assignments are more rigorous tests of student understanding and competence than the usual more objective multiple choice item tests commonly used.

Assessment of Attitude Growth: Methods & Procedures

The assessment of the growth of student attitudes of acceptance and understanding of handicapped persons, and willingness to become involved in working directly with such individuals in their future classroom teaching was accomplished mainly by a 10 item instrument completed anonymously by each student at the end of the course. The instrument consisted of seven items which could be objectively scored and three items which required a constructed response. In addition, each of the seven objective items also encouraged students to explain why they selected the particular objective response they chose. The instrument is presented in appendix B. The structure of the instrument is described in a later section of the paper.

Scores were obtained for all students on the seven objective items and internal consistency reliability estimates were calculated on two samples of preservice teachers according to procedures described by Nunnally (1972, p. 536). For the sample of 18 students in one section of the course, the KR 20 reliability was calculated to be 0.646. For another sample of 55 students from two other sections, a KR 20 reliability estimate of 0.543 was obtained. In addition, the instrument was administered to 12 of the original 18 students in the one section of the course four months following the course. Student responses to the first and second administration of the instrument

were matched by handwriting by the students themselves after completion of the instrument the second time. A test-re-test reliability estimate was calculated for this sample of 12 persons and found to be 0.469.

A second attitude assessment instrument was the standard module evaluation form completed anonymously by each student at the end of each of the 11 modules (see appendix C). Students absent the day of the module completion, or who had not yet completed all the module work, did not always complete module evaluations and could not be identified. Consequently, many individual module evaluation data sets contain less than 18 responses but none contain so few responses as to invalidate the results presented in the next section.

The structure of the module evaluation form consisted of six likert scale items which were objectively scored. The items required students to rate the degree to which the module experiences and content were: (a) close to their expectations, (b) useful to their preparation as a teacher, (c) appropriate topics for study, (d) something they would recommend to a friend, (e) a pleasant or unpleasant experience for them, and (f) something from which they learned only a little or a great deal. One purpose of the module evaluations was to provide direct feedback to the instructors and course developers toward improving the course. Another purpose, more related to growth of student positive attitudes, was to determine how students were reacting to the content and experiences in the course which were directly concerned with handicapped persons and handicapping conditions and the instructional accomodation of the needs of these persons by teachers. It was reasoned that if the fears and misconceptions concerning handicapping conditions were not overcome by the module activities and classroom interactions, that students would be apprehensive, worried, and not positively

oriented toward believing the experience had been worthwhile, informative, positive, and worth recommendation to a friend. Thus, the module evaluation form was designed to serve two purposes.

Four independent estimates of the internal consistency reliability of the module evaluation form were obtained for the one section of the course comprising the main study. The results, which appear in Table 1, indicate that the instrument was highly reliable throughout its use during the course.

TABLE 1

KR 20 INTERNAL CONSISTENCY RELIABILITY ESTIMATES FOR THE MODULE EVALUATION INSTRUMENT

Module Name	Module Sequence	n (Persons)	KR 20 Value
Humanism	First	17	0.919
Individualization of Instruction	Fifth	15	0.949
Learning & Behavior Disorders	Eighth	15	0.769
Sensory Impairments	Eleventh	17	0.947

The module evaluation instrument also contained items concerning students' completion of homework, attendance, and achievement. A copy of the form is found in appendix C.

RESULTS

The results are presented in two sections. The first section concerns growth of students' knowledge and skills as measured by the variety of performance, achievement, and skill demonstration methods. The second section presents the results concerned with the growth of attitudes of the students based on the final evaluation instrument and the module evaluation form results. For the achievement results, only data from the 18 students in the

one section are available. Likewise, for the attitude growth results based on the module evaluation form, only data from one section of the course and the same 18 students are available. However, for the final course evaluation attitude growth instrument there are three sources of data. The first of these is, again, the results from 132 students enrolled in seven other sections of the course in another semester. A third source is a delayed administration of the final course evaluation instrument to 12 of the original 18 students in the first group, four months after the course concluded and after these persons were working as teachers. Results for attitude growth will be presented based on data from all of these sources.

Growth of Knowledge and Skill

The means and standard deviations of 17 measures of student achievement of course objectives concerned with knowledge and skill objectives are presented in Figure 2 at the end of this paper. Mean achievement for each measure is plotted as a point enclosed in a small circle. The standard deviation is plotted as a vertical line bounded by two short horizontal lines. Performance across each of the 17 measures for all 11 modules may be compared directly since all measures are plotted on the same common 10 point scale.

Table 2 presents a summary of the overall achievement of students across 15 of the 17 achievement measures presented in Figure 2. The first measure under the Contingency Management module and the Orthopedic Handicap module measure were removed from this summary. The reasons for this is that the first measure was a group assessment and no inference about an individual student's knowledge or skill may be inferred from the results. The Orthopedic Handicap measure was a skill demonstration of transfer and lifting of crippled persons without use of the lower limbs. It was mastered by all students. Because there was no variance on this measure, it would not be considered a

rigorous achievement test by some experts. However, the remaining 15 measures are all individual measures and all exhibit a range of student performance. Thus, the summary in Table 2 is a conservative estimate of the levels of achievement of students with respect to course knowledge and skill objectives.

TABLE 2

OVERALL STUDENT ACHIEVEMENT BASED UPON 15 MEASURES

Statistic		Average Points Earned
Maximum possible score*		10
n (Persons)		17
Grand Mean		8.399
Standard Deviation		0.862
High Score		9.571 (1)
Low Score		6.110 (1)
Proportion of Students Above:	Fraction	Percentage
90% Mastery	4/21	19.05
80% Mastery	12/21	57.14
70% Mastery	15/21	71.43
Below 60% Mastery	2/21	9.52
Incomplete	1/21	4.76
Withdrew	3/21	14.29

Examination of the achievement data in Figure 2 and Table 2 reveals that the number of students for which the values were calculated is generally

* There were 15 measures with a value of 10 points each for a total possible score of 150 points. The total points achieved by each student were divided by 15 to produce statistics in the common metric of 10 points.

less than the 18 students enrolled in the course. This is because all achievement data was gathered and the statistics computed within one week of the due date for all the work in that module. Consequently, any students who had not completed their work within that time period were not included in the calculations. All except one of the students were able to make up any incompleted work for a given module by the end of the semester.

The overall completion rate of all work for modules by the due dates was very high. Only 12 students across 17 measures failed to complete an achievement measure on time. This is 12 achievement measures not completed on time out of a possible 306 measurements (18 students x the 17 measures shown in Figure 2). This means that the completion rate of achievement measures for modules within the due dates was 96.08% and that only 3.92% of the measures were not completed on time. It should be remembered that these measures included not only examinations and problem solving tasks given in class, but written assignments, project activities, and an occassional examination or project which had to be completed in some other specific location outside of class. The large amount of content in the course, the rapid sequence, and the multiple sources of information and material, made keeping up with course activities and assignments essential to successful completion of the course. Three of the initial 21 students dropped out of the course within the first 4 weeks of the semester because they had gotton too far behind to catch up without repeating the course.

The achievement data in Table 2 and Figure 2 show that the majority of students achieved high levels of course objectives concerned with knowledge and skill outcomes. Examination of Figure 2 also shows that the achievement for three modules was lower than most of the others. These were the Contingency Management, Measurement and Evaluation, and Learning and Behavior

Disorders modules. In all three of these modules the time allowed for learning of the concepts and skills was inadequate and resulted in lower student achievement and wider variations in student performance. Increasing the time needed for learning and the quality of instruction would almost certainly raise the achievement level of students in these modules. In addition, if more time were allowed for learning and completion of all achievement tasks, the proportion of students who achieved mastery on course knowledge and skill objectives would undoubtedly increase. This is a well known fact first hypothesized by Carroll (1963) and later supported by much additional conceptual and empirical research (Block, 1971; Bloom, 1976).

One limitation of these results, is that nothing is known of how students might have scored on these measures prior to instruction. No control group which had not been instructed was used and pre- and post tests were not given on each of the 17 measures. Neither approach was practical because of the large amount of time required to complete the assessment procedures. Rather, assessment of student knowledge and skill across the 17 measures was an integral part of instruction with students being provided feedback on their performance on the tasks as soon as possible, often immediately. Furthermore, the achievement scores reported include many second attempts by many students in the face of a poorly completed task the first time around. Such a procedure is normal under a mastery learning approach where the interest is in teaching students to acquire functional levels of knowledge and skill, and not in insuring a symetrical distribution of achievement scores. The fact that a large number of students had to repeat achievement and performance tasks poorly completed the first time around, a second, or even a third time, after further instruction is an indication that the results presented in Figure 2 and Table 1 represent true growth. This is further confirmed by

inspection of the tests and tasks required of the students which are generally quite demanding and require much information and skill.

Growth of Positive Attitudes

The 10 items on the final course evaluation questionnaire each had a specific purpose. The first item elicited information about attitudes and attitude changes toward handicapped persons. The second item concerned knowledge about the variety and frequency of handicapping conditions. The third item asked about the student's prior knowledge of the mainstreaming legislation, while the fourth item asked about the extent to which the student had become informed about the intent and purpose of the law. The fifth question dealt with the acceptance the student exhibited toward the practice of mainstreaming. The sixth question asked students to judge how skilled they had become in mainstreaming. The seventh item asked students to list those modules they judged most useful in teaching them the things they needed to know in order to properly instruct exceptional children in their classrooms.

The last three items were somewhat different. Item eight asked students to describe changes in the course which would make it better for them personally. Item nine asked students how useful the course concepts and experiences had been in understanding themselves and all students better, not just handicapped persons. This item was designed to measure something of the preceived generalizability of the ideas, methods, and skills developed in the course to better understand one's own perceptions and behavior and the effects these have on human relationships in any setting. The final and tenth item was designed to determine what issues, ideas, or topics the course might have stimulated students to want to know more about. This last item can be considered a measure of the commitment of students to continue learning and an

indicator of the success of the course in raising levels of awareness, concern, and interest among students. Each item was designed to elicit an open-ended, constructed response by the student. This was true for even the 7 items which had objective categorical responses. Furthermore, even these items tended to be non-directive. For example, rather than ask the student to indicate if his or her attitude toward handicapped persons had become more positive, the item asked only if there had been an attitude change. This prevented the item from leading the student. The student reported "yes" or "no" that there had been a change and then was asked to explain the change. All of the 18 students in the first group prepared constructed responses to all 10 items.

Table 3 presents a summary of the responses of students from two groups to the objective items on the questionnaire. The first column of figures are the results for the 18 students in one section. The second column the results for the 132 students enrolled in 7 sections in a subsequent semester.

Examination of the results in Table 3 reveals attitude changes, growth of knowledge, and judgments of the value of the course toward being able to carry out the mainstreaming of handicapped children in regular classrooms as judged by these groups of preservice teachers. Examination of the constructed responses students made to support their choices reveals the direction of attitude change and the degree of understanding of the concepts and issues which had developed.

Analysis of student responses for Group 1 show that all the attitude changes reported toward handicapped persons (Item 1) were positive. Most students reported being fearful and afraid of handicapped persons and handicapping conditions prior to the course activities. The large majority

TABLE 3

SUMMARY STATISTICS FOR FINAL COURSE EVALUATION QUESTIONNAIRE

Item Number	Item Content	Item Option	Group 1 n = 18 f	Group 1 n = 18 %	Group 2 n = 132 f	Group 2 n = 132 %
1	Change in feelings toward handicapped?	Yes	16	88.89	97	73.48
		No	2	11.11	35	26.52
2	Better informed about types and numbers of handicaps?	Yes	17	94.44	91	68.94
		No	1	5.56	9	6.82
3	Prior knowledge of mainstreaming legislation?	Yes	2	11.11	44	33.33
		No	16	88.89	88	66.67
4	Understanding of reasons for mainstreaming?	Yes	17	94.44	131	99.24
		No	1	5.56	1	0.76
5	Agreement with mainstreaming practice?	Yes	13	72.22	65	49.24
		No	3	16.67	4	2.27
		Yes & No	2	11.11	63	36.36
6	How well has course equipped you to practice mainstreaming of handicapped persons in your classroom?	Has Not 1	0	0.00	4	3.03
		2	0	0.00	4	3.03
		3	5	27.78	18	10.61
		4	10	55.56	45	25.76
		5	3	16.67	47	27.27
		6 Very Well	0	0.00	13	7.58
		$\bar{x}$ =	3.889		$\bar{x}$ =	4.267
		S.D. =	0.676		S.D. =	1.108
9	Usefullness of the course in helping you understand yourself and other persons better generally?	Not Useful 1	1	5.56	8	6.06
		2	0	0.00	2	1.52
		3	2	11.11	7	5.30
		4	6	33.33	29	21.97
		5	3	16.67	55	41.67
		6 Very Useful	6	33.33	31	23.48
		$\bar{x}$ =	4.556		$\bar{x}$ =	4.634
		S.D. =	1.381		S.D. =	1.278

with the legislation. It should be pointed out that the achievement results presented in the last section independently confirm the changes students report in knowledge and understanding in these and related areas.

Item 5 asked students to indicate if they agreed with and accepted mainstreaming practices. In Group 1, 72% of the students indicated they accepted the practice. Analysis of their written responses to the question revealed that they cited the benefits of increased personal development of the handicapped person, the increased benefits to the community in the long run from not excluding handicapped persons, and the building of more tolerance and understanding in the general population of other children and people by early and prolonged contact with a variety of handicapped persons. The 17% who disagreed with the practice (3 students) indicated that they thought that mainstreaming cost too much in money and time and was a drain on resources available for the education of normal children. They saw this as reducing the quality of education for all for the sake of a few. Two students felt incorporation of handicapped children into regular classrooms would "slow down" or "hold back" the other children. Two of the students (11.11%) indicated that they had mixed feelings about the mainstreaming idea. Two ideas were expressed. The first was that the mainstreaming of any given individual depended upon the nature, severity, and number of handicaps. These persons felt it would be irresponsible to place some children whose needs could not be well accommodated in regular classrooms in those settings. The second idea was that the amount of support services, special equipment, and staff available to assist the regular classroom teacher had a lot to do with whether or not children with severe handicaps could be mainstreamed.

The responses of students in Group 2 were similar. The greater proportion of students checking the "Yes & No" category was probably due to the

greater proportion of students with prior experience with special education courses and knowledge about handicapped persons and their needs. The written responses of this group also indicate that the severity of the handicapping condition and the types of services, support, and equipment available need to be considered before indiscriminatly mainstreaming handicapped children into regular classrooms for all activities. Other ideas expressed by a few students include the fear that mainstreaming may be too hard on the teacher, may not be in agreement with the wishes of the parent, may be embarassing to the handicapped child, and may be a burden to the other children.

In both Groups 1 and 2, only a small number of student opposed mainstreaming practice and both apparently for the same reasons, fearfulness of the effects on the other children's achievement, of the problems presented to the teacher, and of lack of support and skills by which to properly teach these children.

Students in both groups recognized that they could learn more about how to actually carry out mainstreaming. Inspection of Item 6 in Table 5 indicates very few students thought they were very well equipped to carry out mainstreaming practice. Nearly all of the written responses in both groups indicated that students felt there was a great deal more to learn, that they had only begun, and that to actually carry out mainstreaming practice in real classrooms is an incredibly demanding task.

Students in both groups did see the course as being useful in gaining understanding of themselves and others and not only handicapped persons. Student's comments from Group 1 indicate much better understanding of and tolerance for diversity among people in general, less fear about being different one's self, and more willingness and attempts to use basic course

techniques and ideas to examine areas of personal prejudice and interpersonal problems in their own relationships. Only two students responded to this item in a constructed response manner in Group 2. Perhaps this is because in the subsequent semester, the introductory modules on perception, behavior, and human interpersonal communication were removed and students may not have learned as much in this basic area. These introductory modules were dropped because it was felt the same skills could be taught in the ongoing process of the course without formal time for this material, thus allowing more time for teaching information and skills about specific handicapping conditions and how to accommodate them in instructional matters. It is interesting to note that the proportion of persons in both groups reporting increased understanding of self and others generally is about the same despite this change in course structure.

Items 7 and 8 of the final course evaluation questionnaire asked students to describe the most useful parts of the course and how they would improve the course. Students in both groups nominated practical methods and skills, as well as concrete information and experiences as being most helpful to their preparation as a teacher. No one module, skill, or method was nominated over others by all students. Frequently cited as most valuable were readings, films, and activities which informed about handicapping conditions, their frequencies, and disabused common myths and fears; specific methods and skills, such as learning to use behavioral techniques to manage problem behavior, or how to lock and unlock orthopedic braces and assist crippled children in moving from a wheelchair to a desk and back. Field trips, films, and other experiences which placed students in contact with handicapped persons directly or vicariously were also valued. Only a very few students in both groups nominated any of the broader underlying issues and concepts of mainstreaming

as most helpful.

The most frequently recommended improvement among both groups was to allow more time for learning the methods of mainstreaming presented in each module and to include more concrete skill building sessions and experiences with real handicapped students in real classrooms. Students in Group 1 suggested the skills and knowledge in the course could be, and perhaps should be, taught throughout the teacher education program concomitant with field experience practicum courses and student teaching.

Item 10 asked students to indicate what they wanted to learn more about or what issues and ideas they had come to feel strongly about because of the course. Again, most students indicated a strong desire to know more about specific types of handicapping conditions, what causes them, their effects upon the individual, and much more specific knowledge and experience in how to accommodate them in instructional settings. Learning disabilities were frequently nominated as an area which students wanted to know more about in terms of cause, diagnosis, and methods of effective instruction. Other areas frequently listed were methods of instruction effective for deaf and blind children. Over 90% of the students who responded indicated that there were things they were aroused to know more about by the course. Furthermore, they listed specific areas and concerns for which they wanted more information and skill. It appears the course did stimulate most students to want to continue learning and become more skillful.

A follow-up study on 12 of the students in Group 1 was undertaken four months after the course was completed. Each of these 12 students had been engaged in teaching or student teaching in the intervening period. Each completed the final course evaluation instrument a second time. The objective item portion of the questionnaire was scored for these 12 persons for

both the pre- and post test administration. The results are shown in Table 4. A *t* test for differences between the means showed no significant differences

TABLE 4

PRE- AND POST TEST QUESTIONNAIRE RESULTS FOR A SUB-SAMPLE OF GROUP 1 STUDENTS

Statistic	Pre-Test	Post Test
n	12	12
Mean Score	6.0432	5.969
Standard Deviation	0.890	0.861
% of Maximum Score	86.33	85.27

between the pre- and post test scores. Similarly, analysis of the written responses showed students had not changed their opinions and judgments about the matters dealt with in the 10 items on the questionnaire. It appears that considerable growth occurred in positive attitudes toward handicapped persons and mainstreaming practices as a result of course experiences if student's comments are to be believed. Since all students completed the final course evaluation anonymously, there is no reason to believe the comments to be misleading. It is also apparent, at least for the sub-sample of 12 students, that the attitudes and opinions of students, about the issues raised in the questionnaire, are stable over some period of time following actual teaching experience.

Further independent indication of the growth of positive attitudes toward handicapped persons and handicapping conditions, or at least the study of these topics and learning more about them and how to accommodate the needs of handicapped persons in instructional settings, is found in Figure 1 at the end of this paper. The structure of the module evaluation form, upon which the data in Figure 1 are based, has been described earlier.

Inspection of Figure 1 indicates that students in Group 1 judged the experiences in each of the modules to be positive, worthwhile, of value to them in their future work as a teacher, and of value to others as well. Certainly such uniformly high ratings on the six dimensions across modules indicates most students felt positive toward course content, experiences, learning outcomes, and ideas.

IMPLICATIONS AND CONCLUSIONS

It appears it is possible to teach preservice teachers the basic attitudes, knowledge, and beginning skills which are a prerequisite to the functional ability to effectively teach children with a variety of handicapping conditions in regular classroom settings. Without more information about handicapping conditions, the opportunity to overcome ignorance and fears commonly associated with these conditions, and specific instruction in constructing methods by which to accommodate the instructional needs of handicapped persons, teachers can hardly be expected to be willing or able to engage in the practice of mainstreaming in their own classrooms. Preservice and inservice teacher education programs probably ought to deal with these basic objectives first. After growth in these basic attitudes and skills, further education, training, and experience in actually carrying out the complex instructional accommodations of mainstreaming are needed. In order to further develop functional skill in this complex area, adequate support services, instructional equipment, and specially trained staff need to be available in schools to assist the teacher who has learned the beginning skills and positive attitudes to become more skillful in adapting instruction to a wide range of handicapped and exceptional children. It seems reasonable that this could best be done in some sort of practicum experience or a series of such experiences over the course of student teaching and the first

few years of service as a regular classroom teacher.

There are two benefits which may result from teaching teachers the skills of mainstreaming. These benefits may serve to enhance teacher effectiveness for all children. These are increased tolerance for and understanding of diversity among persons generally, and the functional ability to better individualize instruction to a wide range of individual learning needs, styles, and rates. For even within any, so called "normal", classroom the range of individual differences is enormous; in beliefs, abilities, interests, and learning styles and rates. Historically these differences have tended to be ignored or lumped into the most gross and non-functional categories as is done in the common practice of "tracking" students by ability "levels". Such gross discrimination and superficial accommodation of instructional needs of children will not work with many handicapping conditions. Thus if mainstreaming is to work and work well, teachers will need to learn what they have needed to do all along and they must be supported in doing so. Such an approach is bound to be much more expensive in the short run than present large group "lump them all together", strategies. However, the benefits to individuals and the community as a whole are reduced cost of care of individuals made to be less capable then they could become, and less lost income, taxes, and other contributions of handicapped persons formerly restricted.

Such radical alteration of the way children are taught in schools is not likely to come about easily and perhaps not at all. There is considerable danger that the focus will be upon the specifics of mainstreaming legislation and practice. Under such a thrust, the teaching of more tolerant attitudes and understandings of diversity and the wise and creative individualization of instruction by individual teachers to plan truly individualized

educational programs for diverse children, may give way to fixation on "accurate" diagnosis of student learning problems through tests and the learning of specific techniques such as "behavior modification" by which to teach certain "types" of handicapped children with supposed common problems. One indication of such a trend is that both the vast amount of litigation and the vast amount of legislation, which has resulted in availability of funds for mainstreaming practices, has focused largely on diagnosis and assessment and not on the development of instructional techniques and materials. Money now available to schools to increase the practice of mainstreaming has encouraged some school administrators to go "hunting" for potential learning disabilities and other handicapping conditions among students enrolled in regular classes. Supposedly, these children with special needs can be identified by "tests" and "experts". If enough such children can be found in a given school district, then monies can be made available to hire special education teachers who will "treat" these problems and help these children. How much better it would be to fund those schools who could show that their teachers skillfully and creatively individualize instruction based on their own careful observation of student performances on a wide range of school and real life tasks, not only on test scores. How much better it would be to not fund those schools and school districts who can "prove" certain percentages of their students have certain types of handicaps or disabilities. Why should any school district have to prove that it has a wide range of individual differences in student needs, interests, abilities, and learning styles and rates? Any knowledgeable observer of human development and learning accepts this as a given.

FIGURE 1 (CONTINUED)

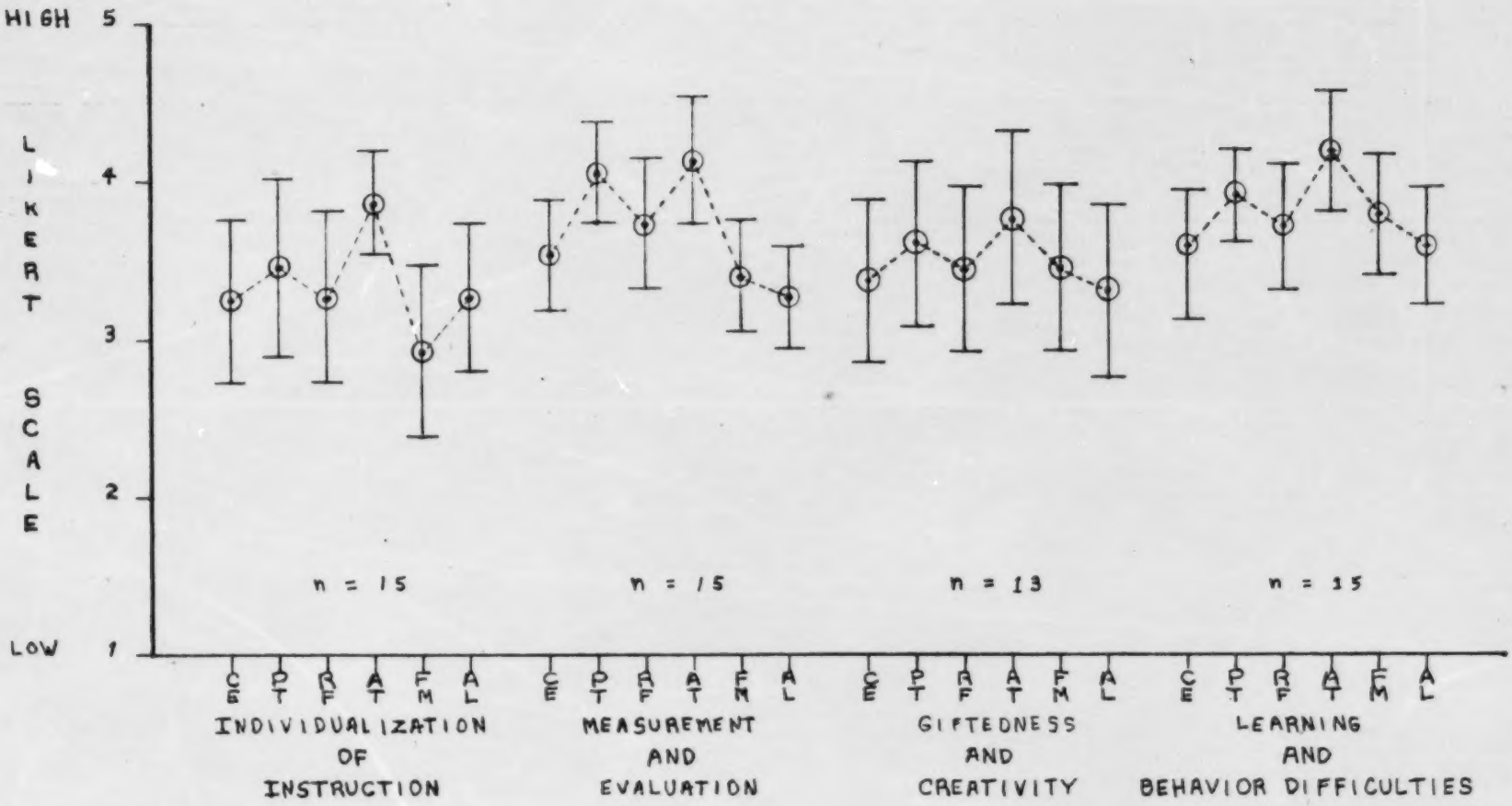


FIGURE 1 (CONTINUED)

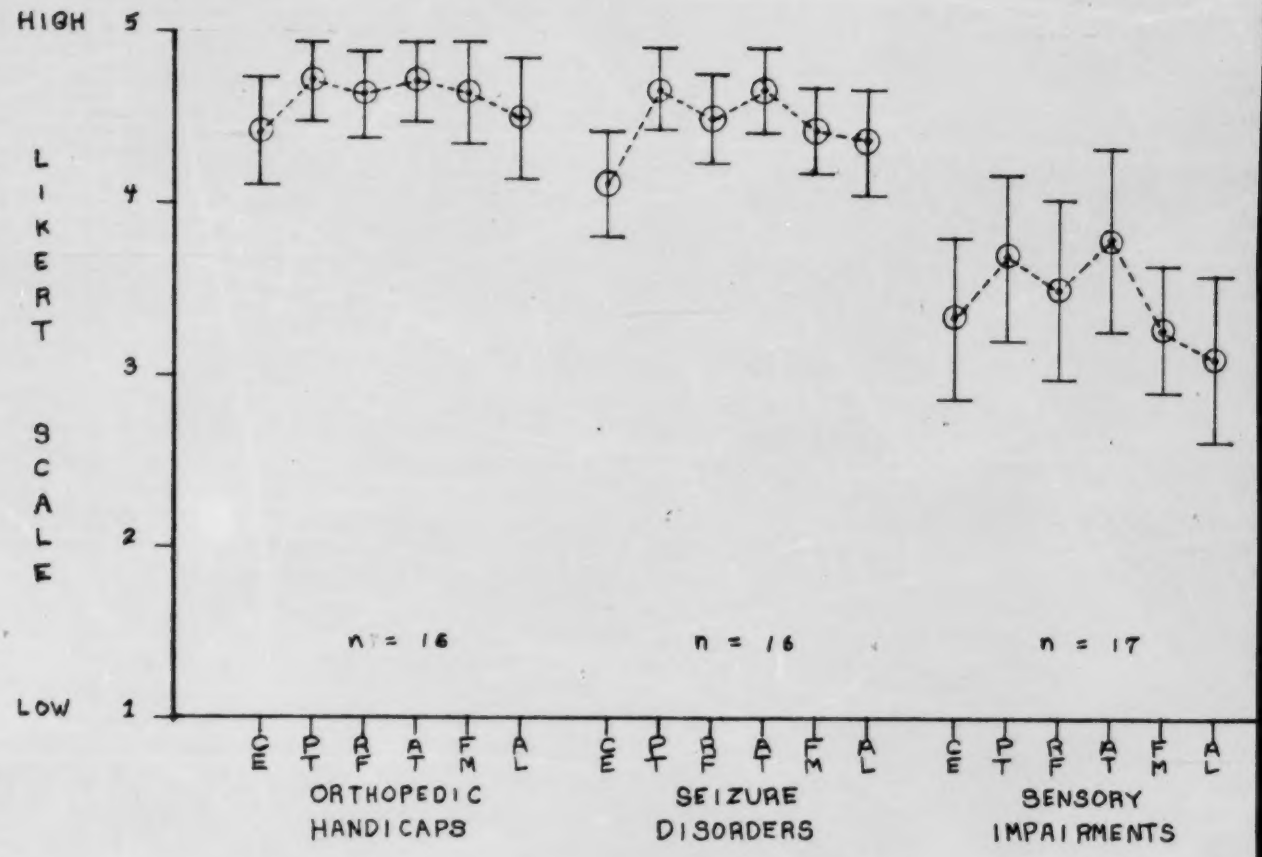
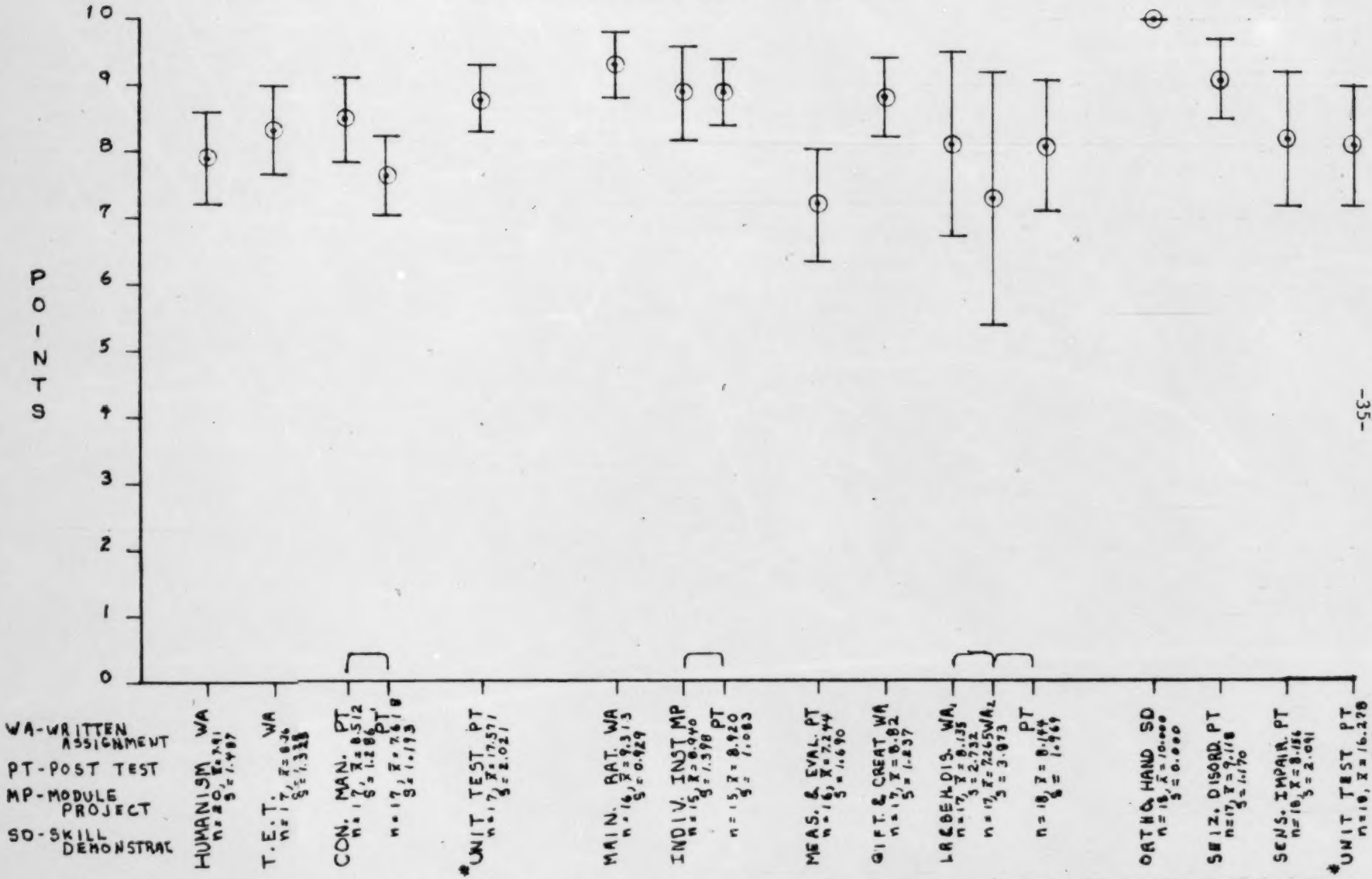


FIGURE 2

MEANS AND STANDARD DEVIATIONS
OF STUDENT ACHIEVEMENT BY MODULE



* Means and standard deviations of unit tests halved in order to plot on a metric of 10 points to facilitate comparison of student achievement across modules.

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EDP 203 Psychology of Teaching
H. P. Cole 9/77

CRITERIA FOR GRADING WRITTEN ASSIGNMENTS

Many of the units in this course require you to complete written assignments. The purpose of these assignments is to have you demonstrate your ability to apply concepts and principles learned in each unit to interpret and explain human behavior in a variety of situations related to instruction.

The majority of the evaluation of your performance in this course is based upon your written responses to these assignments. It is important that you prepare them carefully and completely. Generally your assignments should be no longer than from 2 to 5 pages in length. Please type double space or write clearly on lined paper on every other line.

Your written assignments will be graded on four main criteria. Each written assignment will be rated on a 1 to 10 scale on each criterion. These will be summed and divided by four to determine the overall points for the written assignment. Before handing in an assignment you should read it over and determine how well it meets each criterion. You may wish to ask a classmate to do this for you while you return the favor. You may then wish to modify your assignment before handing it in to the instructor.

Your instructor will score your written assignments on these same criteria. For your convenience the criteria are listed below.

Criterion	Rating Scale
1. Has the assigned task been fully completed?	No 0 1 2 3 4 5 6 7 8 9 10 Yes
2. Are the issues, problems, events, situations or examples presented described clearly and accurately?	No 0 1 2 3 4 5 6 7 8 9 10 Yes
3. Is an attempt made to apply basic course concepts to interpret and explain those issues, problems, events, situations, or examples presented: Are interpretations, judgments, feelings, suggestions, generalizations, and alternative reasons and explanations provided?	No 0 1 2 3 4 5 6 7 8 9 10 Yes
4. Are the interpretations made, logical and are the explanations provided technically correct with respect to course content? Are relevant theories applied wisely and well?	No 0 1 2 3 4 5 6 7 8 9 10 Yes

Please keep these criteria in mind as you prepare your written assignments. You may need to refer to them frequently during the beginning of the course. Remember that each written assignment must attend to each criterion. However, a given written assignment need not provide the entire array of issues, problems, events, examples, interpretations, judgments, suggestions, feelings, generalizations, and so forth. Rather, criteria 2 and 3 above require that your present some of these in each written assignment.

EDP 203 Psychology of Teaching
Instructor Henry P. Cole

Final Assignment: Written Evaluation of the Course

This assignment replaces the final assignment in your course syllabus. The purpose of this assignment is for you to think about what you have learned in this course and to help the people who teach the course improve it for future classes. You will receive 20 points for this evaluation, provided you complete all portions of the assignment. Turn your paper in to the student representative on the day of the final exam. If all parts of the assignment are complete the representative will record 20 points for you in the grade book. This assignment is worth half of your final examination grade. You should not put your name on the assignment so that your remarks will not influence your grade positively or negatively. Your instructor will not know who wrote which evaluation. As you write your evaluation be sure to be complete, logical, and support your statements.

Answer all questions and provide comments where indicated. Each totally completed question counts 2 points.

I. Did this course change your feelings or attitudes about persons with various handicaps such as mental retardation, learning disabilities, physical disabilities, etc.? (Check one) ___ Yes ___ No

Please explain how and why your attitudes toward these persons changed or did not change.

II. Did you become better informed about the types and number of various handicaps among school age children?
(Check one) ___ Yes ___ No

Please explain how and why you have or have not become more informed about the types and numbers of handicaps.

III. Did you know about the legislation which requires mainstreaming before you took this course?
(Check one) ___ Yes ___ No

Comments

IV. Do you now understand the main reasons for mainstreaming and the laws which require this practice?
(Check one) ___ Yes ___ No

Please make a brief statement in your own words which summarizes the ethical and logical reasons for mainstreaming.

V. Do you agree that it is a good idea to place children with different types of handicapes in regular classrooms?
(Check one) ___ Yes ___ No

Please explain your answer.

VI. How well has this course equipped you to work with and teach exceptional children in your own classroom? Please circle one number.

Not well at all 1 2 3 4 5 6 Very Well

Please explain your answer, - why your rating is high or low.

VII. What were the most useful parts of this course for you, from the standpoint of teaching you things you need to know to better teach exceptional children in your classroom. Name each part and briefly tell why it was useful.

VIII. Please describe changes in the way this course could be taught which would make it a better course for you. Explain why these changes would be better for you.

IX. To what extent have the things you learned in this course been useful in understanding yourself and all students, not just exceptional students? (Circle one)

Not Very Useful	1	2	3	4	5	6	Very Useful

Please explain.

X. What things has this course made you feel most strongly about or want to learn more about? Please list those areas and briefly explain why you want to know more about them or why you feel strongly about these things.

EDP -203; Psychology of Teaching
H. P. Cole

Department of Educational Psychology
& Counseling - Univ. of Ky.

MODULE EVALUATION

Please fill out the questions below and leave this form with the instructor before you depart. (No names please)

1. Title of Module _____ Instructor _____

2. Did you attend and participate in all class activities in this module? (Check appropriate places.)

   ___ Yes ___ No (If no, indicate how many class periods you were absent during this module. Periods absent = _____.)

3. Did you read all of the assigned work for this module? ___ Yes ___ No When?
   ___ Before class? or ___ After Class? or ___ Both?
   (Check one.)

4. Was this module close to your expectations for it? *

   Not Close At All 1 2 3 4 5 Very Close

5. Were the ideas or procedures presented to you useful in any way to your preparation as a teacher? *

   Not Useful At All 1 2 3 4 5 Very Useful

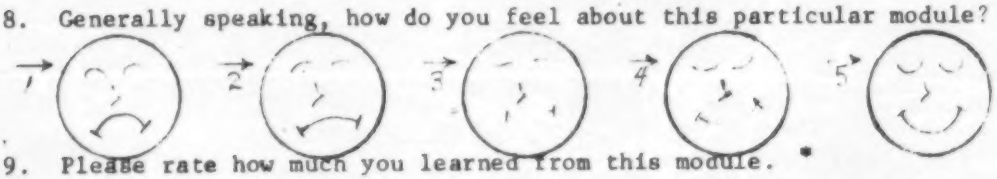
6. Would you recommend this module to a friend? *

   Definitely Not 1 2 3 4 5 Definitely Yes

7. Was the topic appropriate for a module in your opinion? *

   Definitely Not 1 2 3 4 5 Definitely Yes

8. Generally speaking, how do you feel about this particular module? *



9. Please rate how much you learned from this module. *

   Learned Little 1 2 3 4 5 Learned Much

10. How many points did you earn on your assignments for this module?
    Points earned. (Check one.) ___0-2 ___3-5 ___6-8 ___9-10

11. Please comment on the module and its presentation and make suggestions for its modification and improvement. Write on the back of this paper.

* Circle appropriate number.